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N° XI.

SAFETY APPARATUS FOR DRY-GRINDERS.

The GOLD VULCAN MEDAL *was this Session presented to Mr.* J. ELLIOTT, *of Sheffield, for his* APPARATUS *for the use of Persons employed in the various Branches of* DRY-GRINDING. *A Model of the Machine has been placed in the Society's Repository.*

THE experiments made by Mr. Abraham to obviate the dreadful consequences of dry-grinding to the men employed in it, and the publication of his inventions for that purpose in the Society's Transactions, Vol. XL. though not immediately productive of any considerable effect, have indirectly led to the discovery and adoption of means from which, as the certificates show, great and permanent advantages will probably be derived.

The following explanation of the engraving will convey some idea of the nature and mode of application of the contrivances, and the annexed certificates will show the opinion of those persons best calculated, by their pursuits and peculiar information, to form an estimate of their value.

Fig. 6, plate XVI, is a side view of a Sheffield grinder's wheel, with the preservative apparatus attached. *a* is the wheel, *b* the grinder's seat, *c* a close box into which the grit and steel dust are thrown by the motion of the wheel, and from which it escapes through the chimney *d d* into the open air, being driven by the current produced by the revolution of the wheel. The chimney is not open at its end, but on the underside, as shown in fig. 9, in consequence of which the stream of dust is not liable to be blown backwards by sudden gusts of wind. The front of the box *c* is partly inclosed by pieces *e e* (see fig. 7 which is a bird's-eye view of part of the apparatus), and the inclosure is completed by two curtains *f f* of leather, or canvas, shown in the front elevation, fig. 8. The part *g* of the box lifts up on hinges, as shown by the dotted lines in fig. 6, and it can be maintained at any elevation by a pin *h*, for which a series of holes are made in the side of the box. The lifting part *g* is omitted in fig. 7, for the purpose of showing a piece of leather *k*, which makes the bottom of the box fit closely to the stone under all circumstances. This is necessary, because as the stone is reduced in diameter by use, it would cease to fit the aperture made in the box for its revolution, and would permit the escape of the dust, which is prevented by occasionally adjusting the leather or canvas *k*. The curtains *f f* are suspended from the lifting part *g*, and are elevated with it. Should any fires be burning in the room when this apparatus is used, apertures in the walls or windows should be made, to supply them with air, or the current produced by the wheel will be counteracted by that which will enter by the same channel to supply the fires.

CERTIFICATES.

SIR; Sheffield, 9th May, 1823.

WE are requested by T. Champion, esq., the master cutler, to state to you our opinion as to the utility of Mr. Elliott's apparatus for dry-grinders.

We beg respectfully to state, that our dry-grinders use Mr. Elliott's apparatus, and find it of the greatest utility; before the application of the apparatus in question, the room in which the dry-grinders were at work was charged with a disagreeable sulphureous dust arising from the stones, steel, and metal, when the workmen were at work, which was, no doubt, the principal cause of destroying their health, and bringing them to a premature death; but since we adopted Mr. Elliott's invention, we have the pleasure to say, the atmosphere of the room where the dry-grinders are at work is now clear of dust, and we have now the pleasing anticipation of preserving both the health and lives of that useful class of men, by rendering the atmosphere in which they breathe more pure and healthy. Hoping our remarks may be of use to the ingenious inventor,

We are, Sir,
&c. &c. &c.
THOMAS ELLICE, & Co.

P. S. We shall be happy to show any gentleman our grinding place, who will take the trouble of calling on us, and who may be desirous of witnessing the effects of Mr. Elliott's apparatus.

SIR; Sheffield, 17th May, 1823.

SINCE my return home I have conversed with several of the committee appointed at this place to investigate the merit of Mr. John Elliott's invention for the benefit of dry-grinders; on calling upon one of them I was, for the first time, shewn a pamphlet enumerating the subjects for which premiums had been proposed in the Session 1822 and 1823, by the Society of Arts, in London; among which to my agreeable surprise, is the following: it will be found in page 30, number 253, but which was not adverted to as one of the rewards offered by the Society.

"To the person who shall invent and produce to the Society, a mode of obviating the prejudicial effects that attend the operation of pointing needles and other branches of dry-grinding, during which, the particles of grindstone-dust, steel, and iron, being thrown into the air and received with it into the lungs, occasion asthma, consumption, and other painful disorders; the gold medal or thirty guineas."

A conviction upon my mind that the machine invented by Mr. Elliott (simple in its form, but powerful in its effects) fully accomplishes the object sought after as above, by the Society of Arts, prompts me with all deference, to appeal to yourself, and the other gentlemen of the London committee, as to Mr. Elliott's becoming the candidate for the gold medal. The value of this great discovery here becomes better appreciated and its adoption more extensive; I believe I mentioned, that to my own knowledge, twelve of the grinders life preservatives had been fixed up in this town, but it is ascertained upon an examination just made here, that upwards of thirty are in constant use, and at this time more are preparing. Humanity rejoices at the prospect of this diminution of suffering among a laborious and useful class of artizans, whose lives, hitherto, seldom extended beyond forty years, whilst in some departments of dry-grinding they appear to have been limited to thirty; it may perhaps not be improper to notice further, that the expense of these machines is very moderate, viz., 10*s.* 6*d.* each; that the workmen find them not to interfere with their business, but rather afford facilities and conveniencies.

I am, Sir,
&c. &c. &c.
THOMAS CHAMPION, *Master of the Cutlers' Company, Sheffield.*

N° XII.

IMPROVEMENTS IN THE RIGGING OF SHIPS.

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The SILVER VULCAN MEDAL *was this Session presented to Lieut.* WILLIAM PRINGLE GREEN, *R. N.,* FOR CERTAIN IMPROVEMENTS IN THE RIGGING OF SHIPS, *Models of which have been placed in the Society's Repository.*

THE unfortunate issue of several naval actions with the Americans during the last war, in which British frigates were captured, first attracted Lieut. Green's attention to the subject. In analysing these, it appeared that a principal cause of the success of the enemy, was the rapidity with which he shot away the rigging, and consequently disabled the masts of his opponent.

The masts of ships are secured in two directions; longitudinally, by means of long ropes called stays, and in a trans-